



**Golden
Empire
Amateur
Radio
Society, Inc.**

www.gearsww6rhc.org

"Dedicated to Public Service"

THE RADIATOR



W6RHC
IRLP #8170



P.O.Box 202 Chico, CA 95927

July 2023 Newsletter

GEARS Founded August 13, 1939

Summer got off to a great start at GEARS Field Day on June 24-25. We had a dedicated group of operators at the Masonic Lodge enjoying the most comfortable Field Day weather in memory.

Tom Rider W6JS barbecued hamburgers and sausages. Several people brought sides and everyone enjoyed a great meal.

This year GEARS will be hosting the Steak Bake in September. We've reserved a spot in Wildwood Park in Chico again, I'll email the details before the event.

JOTA Scouts Jamboree-on-the-Air is coming up in October. I'll keep you informed of the details.

Of course we have our regular activities as well. The ham radio breakfast will be at 9 am Saturday, July 8th at Farmer's Skillet on Cohasset in Chico.

The general meeting Monday on July 17th is at the Chico Public Library, 1108 Sherman Ave. 6 pm social hour, 7 pm meeting.


Check in to the GEARS net at 7:30 pm Tuesdays on 146.85 - pl 110.9. We'd love to hear from you every week.

In this issue of the Radiator, we have a great article written by Ward Silver, N0AX about Summertime Propagation. HF can be a little frustrating, since it can seem a little complex to our new operators, hopefully this article will help give you more understanding.

We also have an article on ARRL Log Archives. Perhaps you might have some QSL card you'd like to contribute.

Jim Matthews K6EST

July 2023 Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2 8pm OARS Net	3 7pm GARS Net 7pm GEARS Board Meeting 8pm ARES Net	4  7pm PARS Net 7:30pm GEARS Net	5	6 6:30 pm PARS meetings 7:30pm Simplex Net	7 7pm OARS meeting 7pm GARS meeting	8 9am Chico Breakfast
9 8pm OARS Net	10 7pm GARS Net 8pm ARES Net	11 7pm PARS Net 7:30pm GEARS Net	12	13 7:30pm Simplex Net	14 7pm GARS meeting	15
16 8pm OARS Net	17 7pm GARS Net 8pm ARES Net 6pm GEARS Meeting	18 7pm PARS Net 7:30pm GEARS Net	19	20 7:30 Simplex Net	21	22 9am OARS Breakfast
23 / 30	24 / 31 7pm GARS Net 8pm ARES Net	25 7pm PARS Net 7:30pm GEARS Net	26	27 7:30 Simplex Net	28	29

VEC Testing, FCC License Exam available by appointment. For information or registration call Tom Rider, W6JS 530-514-9211

Chico Breakfast 2nd Saturday 9am Farmers Skillet Cohasset Rd, Chico

GEARS Board Meeting 1st Monday 7pm by Google video meetups.

PARS Meeting 2nd Thursday 6:30pm, doors open 6pm Old Magalia Community Resource Center

OARS Meeting Second Friday of the month, St. Pauls Episcopal Church Hall, Oroville.

GARS Meeting Second Friday of the month, Lutheran Church Hall, Artois.

GEARS Meeting, Doors open 6pm, meeting 7pm at Chico Public Library, 1108 Sherman Ave, Chico

OARS Breakfast 4th Saturday of the month, at Cornucopia of Oroville.

NETS:

OARS Club Net Sunday 8pm 146.655 Mhz - PL 136.5

GARS Club Net Monday, 7:00 pm 147.105 MHz + PL 110.09, secondary: 146.850 MHz-PL 110.9

Yuba Sutter Club Net Monday 7pm 146.085 MHz + PL 127.3

GEARS Club Net Tuesdays 7:30 PM 146.850 MHz - PL 110.9

PARS Club Net Tuesday 7pm 145.290 - PL 110.9

Simplex Net Thursday 7:30 p.m. 146.52 no tone

Yuba Sutter ARES Net Thursdays 7pm 146.085 MHz + PL 127.3

Sacramento Valley Traffic Net Nightly 9:00 PM 146.850 MHz - PL 110.9

How to Take Advantage of ARRL Log Archives

By Wayne Smith, K8FF

I recently decided to update my old, neglected Phone DXCC award. It has probably been 40 years since any endorsements have been applied for. My primary concern over the years has been to keep my Mixed DXCC award up to date. Upon doing more research, I discovered that over the years I indeed had most of the outstanding entities confirmed either with an actual QSL card or by LoTW. After going through thousands of accumulated cards and LoTW confirmations, I realized that only two entities were needed to achieve first place on the DXCC Honor Roll Phone.

The two entities needed were Minami Torishima (also known as Marcus Island) and the South Shetland Islands. By doing online research of past operations, I quickly discovered that I had indeed worked KA1S on Minami Torishima in 1977. That left only the South Shetland Islands; I discovered that a number of stations had been worked but, unfortunately, all on CW or Digital.

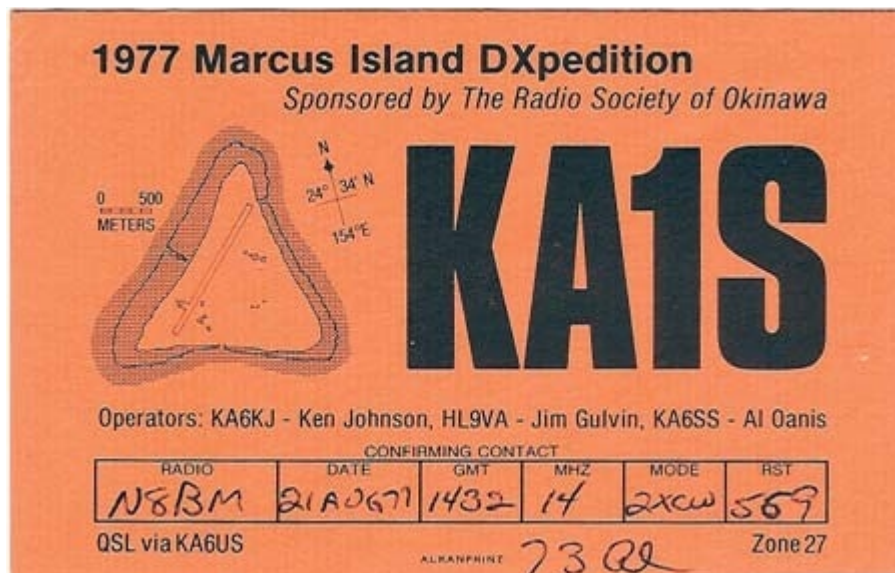
The challenge became how do I get a confirmation from KA1S back in 1977? Back to the internet! My research included QRZ.com, K8CX.com, and the ARRL website. The ARRL website maintains an archive of some selected old operations. I then sent an email to the ARRL and found that the QSL gods were looking favorably on my efforts. The original logs from the KA1S operation were indeed on file and some were available on LoTW. Unfortunately, I was not able to obtain a paper QSL card, but the LoTW files were available. Within minutes the confirmation was applied to my DXCC account.

Here is a photo of an actual KA1S QSL card of the Marcus Island DX Expedition from the K8CX.com website.

There are currently over 200 logs archived at ARRL made possible by an endowment from JA1BK. Many of the logs are already available on LoTW while many of the logs are in the

process of being uploaded. The log archives can be located by using the search box located on the ARRL home page. The previously uploaded logs are noted on the list. Most of the logs on the list are pre-digital or pre-1990. Additional information is available including licensing documentation, landing permits, and other pertinent information from some operations.

Anyone wishing to contact the ARRL about searching available logs or to donate old logs, please email dxlogarchive@ARRL.org.



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HF Summertime Propagation

By Ward Silver, N0AX

It seems like just a few weeks ago, the upper HF bands were open all day long to faraway places. At night, the low bands took up the slack, especially as the terminator slid past your location. While we still have plenty of sunspots (thank you, Cycle 25!), the bands are beginning to sound a lot different as summer gets underway. It's natural to expect that with even more daylight, the upper HF bands should be even more open, so what's going on?

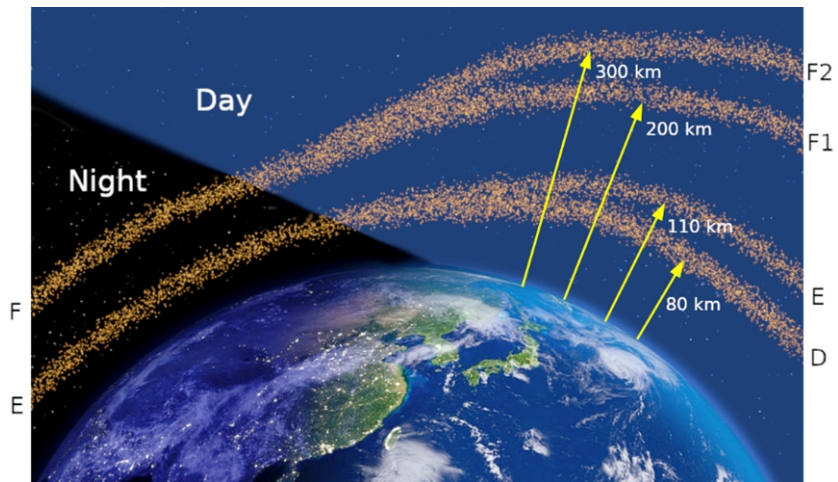
Summertime Ionosphere

First, let's recognize that when we here in the U.S. talk about "summertime," we're really just referring to the Northern Hemisphere. The tilt of the Earth's axis means that the northern ionosphere is illuminated longer and more directly by UV from the Sun. That means its structure will be a little different in the summer than in the winter, and HF propagation will be different too.

Illumination of the ionosphere with UV varies greatly with time of day and the seasons. The phase of the solar cycle also matters, and we are in the rising phase of Cycle 25 during which sunspot activity is increasing. More sunspot activity also increases ionization in all of the regions—D, E, F1, and F2.

Propagation diagram

The highest F2 region is what provides long-distance HF propagation, day in and day out, all year long. Its ionization is greatest during daylight hours. The F2 region is strongest during the day and the F1 region below it is mostly a summer daytime region. It appears during the day when solar UV is strongest. The F1 and F2 regions merge at night. Ionization of the lower E and the lowest D regions are also stronger throughout the summer day.



The E and F1 regions are responsible for the big shift in HF propagation we observe in the summer.

Blanketing and Absorption

Blanketing (also known as "screening") refers to a lower region being sufficiently ionized to bend signals heading upward back to Earth before they can reach the higher long-distance regions. For example, the figure below shows how the E region might block signals from reaching either of the F regions. The F1 region sometimes acts the same with respect to the F2 region. It's as if the lower region placed a blanket over the Earth from the perspective of the upper regions.

The F1 region is primarily a summertime region caused by the extended UV during daylight. The E region is present all year long throughout the day. These two regions work together to block signals headed to the F2 region: the F1 region blankets higher angle signals, and the E region blankets those at lower angles. Either way, the result is a lack of long-distance DX through the day in the summer months.

Absorption occurs as signals travel through a region with strong, dense ionization. This scatters the wave or dissipates its energy as heat. It can occur in the D, E, and F1 regions although it is strongest in the lower regions. The effect is also strongest at lower frequencies.

During the summer, E region and F1 region blanketing and absorption end several hours before sunset. After sunset, the F1 region combines with the F2 region to produce a lower-altitude, less densely ionized

nighttime F2 region. The nighttime F region is less densely ionized and has lower MUFs than the daytime F2 region, but it is still there, resulting in long-distance propagation through the summer evenings.

The F1 region acts to absorb 20 meter and higher frequency signals through the summer day at high angles. The result is degraded F2 propagation on these bands during midday caused by F1 region absorption and blanketing of F2 propagation. This is especially noticeable in the hours around noon on the upper bands in particular.

Absorption takes its toll on the lower-frequency HF bands through the day. D region absorption rises quickly at sunrise as soon as solar UV can reach the lower regions. Summertime absorption will remain strong on 40 meters until late afternoon, on 80 and 160 meters until sunset, and extends on 160 into the evening. The E region absorbs or blankets 40 meter signals from increased ionization until sunset, extending on 80 and 40 meters into the evening.

Short Skip and Sporadic E

For the higher HF bands, while blanketing and absorption take a significant toll on long-distance F2 propagation, it's not a lost cause by any means! The blanketing effect produces shorter hops as the signal is returned to Earth, resulting in "short-skip" propagation with a 1,200 to 1,500-mile hop.

For example, this is great for making contacts around the North American continent on the 15, 12, and 10 meter bands. As absorption falls in late afternoon or before it builds up in the morning, 20 and 17 meters benefit as well. There is a lot of day-to-day variability in propagation, so don't take these guidelines as absolute. There is no experience like calling CQ on a band that you don't expect to be open and getting a completely surprising contact in return! Use the Reverse Beacon Network and listen for the 10 meter beacon stations to see the actual propagation at the moment.

Sporadic E is another bonus for the summer months. It provides similar propagation to short skip. In fact, the same time is often given to both. True sporadic E or Es is created by wind shear in the E region forming thin layers of dust from meteors and terrestrial events. When the dust is sufficiently dense, it can reflect signals back to Earth with excellent signal strength. The dust is organized as patches or clouds that move with upper-atmosphere winds so the propagation will move with them.

The primary seasons for sporadic E are in May-July and December-January. Sporadic E occurs most commonly during the summer daytime and early evening at low and middle latitudes. At higher latitudes, sporadic E tends to form at night. North America straddles the medium and high latitudes so sporadic E can form during the day and stay active well into the evening. It also forms in conjunction with a disturbed ionosphere following solar activity, so flares and CMEs have some benefits. The clue is that if you hear what sounds like short skip on the higher HF bands, particularly 10 meters, then listen on 6 meters as well. Call CQ and see what happens!

Atmospheric Noise

Along with the summer comes increasing storms that greatly affect the lower HF bands. While the band may be open, the lower signal-to-noise ratio makes communication more difficult. On the lower HF bands, however, blanketing is the same mechanism that creates NVIS propagation, so if the noise is manageable, the signal levels can be stronger.

Don't forget that northern summer means winter in the southern hemisphere. That creates opportunities for some good low-band DXing when southern stations are benefiting from lower noise levels. This is when noise-rejecting, directional receive antennas really help by cutting down noise from thunderstorms in other directions.

Morning: Short skip will be likely on the higher HF bands and 6 meters by mid-morning to late morning
NVIS will be useful on 40 meters but weaker on 80 meters due to absorption

Afternoon: Start looking for 40 meters to open to the east and stronger 20 meter signals

Before sunset the higher HF bands may open and 20/40 meters will be strong after sunset

Evening: 20 meters and even 15 meters may continue to be open for some time to the west

40 meters will be open across the continent for quite a few hours

80 and 160 meters will come alive a few hours after sunset

Nighttime: Depending on solar flux levels, 40 meters may be an excellent band all night

Your night crew should make the most of 80 and 160 meter activity in your region

Sunrise: Look for 20 to 10 meters to open quickly to the east as UV ionizes the F2 region

The higher bands will degrade as blanketing and absorption build up from the F1 and E regions

Short skip will develop on the higher HF bands

NVIS will be useful on 40 and 80 meters, but 80 meters will fade due to absorption

There is so much to HF propagation that every operator, experienced or new, with stations large and small, has something to learn every day, every season, and every year. The ionosphere also has plenty of tricks to play, so get on the air and see what you can hear!

GEARS CENTURY MEMBERS

Michael Ellithorp Kent Hastings

Bennett Laskey Jim Van Sickle

Stephen McDermott

We thank these members for their extra support.

GEARS Officers:

President.....Vacant
Vice-President.....Jamie Johnson KN6PWW
Treasurer.....Jim Matthews K6EST
Secretary.....Tony Stefanetti KN6UNT
Director.....Bennett Laskey K6CEL
Director.....Larry Mitchell KF6NCX
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VEC Chairman.....Tom Rider W6JS

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<https://drive.google.com/GEARS>

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JiminChico@yahoo.com

Your dues and contributions support our local repeaters, ARES, Field Day and outreach events to keep amateur radio alive in our area. GEARs also makes donations to support other local repeaters and clubs.

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